

REMARKS

The rejections under 35 U.S.C. § 102(b) of Claims 1-5, 7, and 10-20 as anticipated by U.S. 5,190,738 (Parent) or U.S. 5,283,542 (Ochiai et al) are respectfully traversed.

As recited in above-amended Claim 1, the invention is a flame synthesized aluminum nitride filler-powder comprising elements Al, O and N, or comprising elements Al and N, wherein the particle size of the powder is included within the range of 0.001 to 500  $\mu\text{m}$ , the mean particle size thereof is within the range of 1 to 100  $\mu\text{m}$ , the external shape of the particles is non-squarish, the surface roughness of the particles is smooth, and the degree of circularity of the particles is about 1.

Parent discloses a process for producing unagglomerated single crystals of aluminum nitride (AlN) described as approximately spherical and having diameters in the range of 10-100 microns, by a carbothermal reaction modified by employing an alkali metal oxide as a crystal growth (grain growth) promoter and/or catalyst (column 2, line 43ff).

Ochiai et al discloses a high-thermal-conductivity filler, which may be AlN, and which is described as preferably a combination of particles, including spherical particles having an average particle diameter of from 20 to 90  $\mu\text{m}$  (column 3, lines 57-68).

The Examiner finds that each of the above descriptions anticipates the presently-claimed invention, even though Parent's process of making is different from that recited in the claims.

In reply, neither Parent nor Ochiai et al anticipates or otherwise renders the present claims unpatentable.

Fig. 1, **attached herewith**, graphically demonstrates differences in mean particle diameter, shape, and roughness between the presently-claimed invention, and the AlN of Parent and Ochiai et al, as well as the AlN of previously applied 5,126,121 (Weimer et al '121) and U.S. 5,525,320 (Pratsinis et al). Specifically, "Present invent" shows a product of

the present invention which is "Direct LPG firing" gas-phase process powder. On the other hand, the AlN of both Parent and Ochiai et al is shown to be the result of a solid-state sintering process wherein the AlN has a hexagonal crystal structure, and a mean particle diameter  $> 10 \mu\text{m}$ , with a "squarish" shape. Fig. 3, **attached herewith**, further highlights the differences between the AlN of the present invention and that of Parent. See also U.S. 5,096,860 (Nadkarni), a copy of which is **submitted herewith** in an Information Disclosure Statement.

In the present invention, using a high efficiency direct-firing method, since the nitriding reaction can be completed before a change of crystal structure occurs, a "non-squarish" product with a particle size of  $1\sim 100 \mu\text{m}$  can be obtained.

A further difference between the present invention and Parent is shown in Fig. 2, **attached herewith**. The product of Parent includes non-impurities in the crystal structure of AlN, but includes a non-AlN element as an impurity in the product powder as a whole. The product of the present invention, on the other hand, includes non-impurities in the crystal structure of AlN but no non-AlN element as an impurity in the product powder as a whole.

For all the above reasons, it is respectfully requested that the rejections over prior art be withdrawn.

The rejection of Claims 3 and 4 under 35 U.S.C. § 112, second paragraph, is respectfully traversed. Indeed, the rejection is now moot in view of the above-discussed amendment. Accordingly, it is respectfully requested that it be withdrawn.

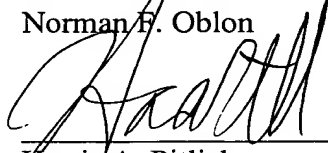
Applicants respectfully call the Examiner's attention to the Information Disclosure Statement (IDS) **submitted herewith**. The Examiner is respectfully requested to initial the Form PTO 1449 submitted therewith, and include a copy thereof with the next Office communication.

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All of the presently pending and active claims in this application are now believed to be in immediate condition for allowance. The Examiner is respectfully requested to rejoin non-elected Claim 6, and in the absence of further grounds of rejection, pass this application to issue with all active and rejoined claims.

Respectfully submitted,

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